

## Excessive Ethanol-Seeking as Related to Impulsive Behavior as Measured by Delay Discounting

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The discounting of delayed rewards, a specific type of impulsive behavior, has been associated with alcohol use disorders. However, the way in which this characteristic is related to the genetic and behavioral paths which lead to high-drinking is a newly emerging area of alcohol research. Rodents selectively bred for extreme high vs. low alcohol preference have shown parallel patterns of delay discounting. This study investigated whether or not delayed discounting is preferentially related to ethanol-seeking vs. consumption. Alcohol preferring rats (P; n=5), High Alcohol Drinking rats (HAD2; n=15), and Long Evans rats (LE; n=11) were used and have previously been identified as high seeking/high drinking, moderate seeking/high drinking, and moderate seeking/moderate drinking, respectively. Six levels of delay (0, 2, 4, 8, 12 and 16 seconds) were assessed using a sucrose reinforcer. The average indifference points for each delay were then fitted to hyperbolic equations to yield a single parameter ( $k$ ). An ANOVA for those values, along with post hoc testing, revealed Ps to have larger  $k$  values than both HAD2s and LEs. However, the HAD2s and LEs were not different from each other. A mixed ANOVA for indifference points showed a main effect of Delay ( $p<.01$ ), Group ( $p<.01$ ), and no group/delay interaction ( $p=.08$ ). The main effect of group revealed the same pattern of findings for the indifference points as for the  $k$  values. Both the higher  $k$  values and the lower indifference points of the Ps indicate their steeper discounting in comparison to both HAD2s and LE. These results suggest that this measure of impulsivity could be associated with the quantity of ethanol-seeking, and not just with the inclination to consume ethanol. These results extend previous findings, and as all animals were ethanol naïve, these results support the idea that increased impulsivity is a characteristic that precedes addictive disorders.

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